

## NOTAS CIENTÍFICAS

### Yellow and purple nutsedges survey in the southeastern Buenos Aires Province, Argentina<sup>(1)</sup>

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Abstract – A survey of 79 fields was conducted between December 1993 and January 1994, to determine the distribution and relative importance of species of the genus *Cyperus*, to justify developing management strategies in the southeastern of Buenos Aires Province, Argentina. Yellow and purple nutsedge were found in 43% and 9% respectively of the surveyed fields. Thirty eight per cent of the surveyed area showed a heavy infestation of yellow nutsedge, and in 90% of cases yellow nutsedge was invading fields cultivated with summer crops and associated with one or more of other seven perennial weeds, mainly bermudagrass.

Index terms: *Cyperus*, weed plants, agronomic crop production, horticultural crop production.

### Recenseamento de espécies de tiririca-amarela e tiririca-vermelha no sudeste da Província de Buenos Aires, Argentina

Resumo – Entre dezembro de 1993 e janeiro de 1994, realizou-se um recenseamento para determinar a distribuição e importância relativa de espécies do gênero *Cyperus*, com o objetivo de justificar o desenvolvimento de estratégias de manejo no sudeste da Província de Buenos Aires. Tiririca-amarela e tiririca-vermelha foram encontradas em 43% e 9%, respectivamente, dos lotes avaliados. Trinta e oito por cento da zona recenseada mostrou uma grande infestação de tiririca-amarela, e em 90% dos casos, esta planta daninha esteve associada a outras espécies perenes, principalmente grama-seda.

Termos para indexação: *Cyperus*, plantas daninhas, grandes culturas, horticultura.

The family *Cyperaceae* includes approximately 3,000 species, of which about 220 are recognised as weeds. Nearly 42% of these weeds are of the genus *Cyperus* (Bendixen & Nandihalli, 1987). Purple nutsedge and yellow nutsedge are the most widespread weed species of this genus. Purple nutsedge has been classified as the world's worst weed (Holm, 1969).

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<sup>(1)</sup> Accepted for publication on March 29, 2000.

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Yellow nutsedge is mentioned as a serious problem in Africa, Canada, Peru and USA (Lapham, 1985; Keeley, 1987; Holt, 1994). It was also reported as present in several countries in South America, Asia, and Australia (Bendixen & Nandihalli, 1987). In Argentina, purple nutsedge and yellow nutsedge are considered invasive weeds that interfere with crops (Leguizamón, 1981; Marzocca, 1992). Yellow nutsedge has been found in the southeastern of Buenos Aires Province (Martínez Crovetto, 1944) and competes with sunflower (*Helianthus annuus*) and potato (*Solanum tuberosum* L.) in the same area (Leaden et al., 1983; Eyherabide, 1995).

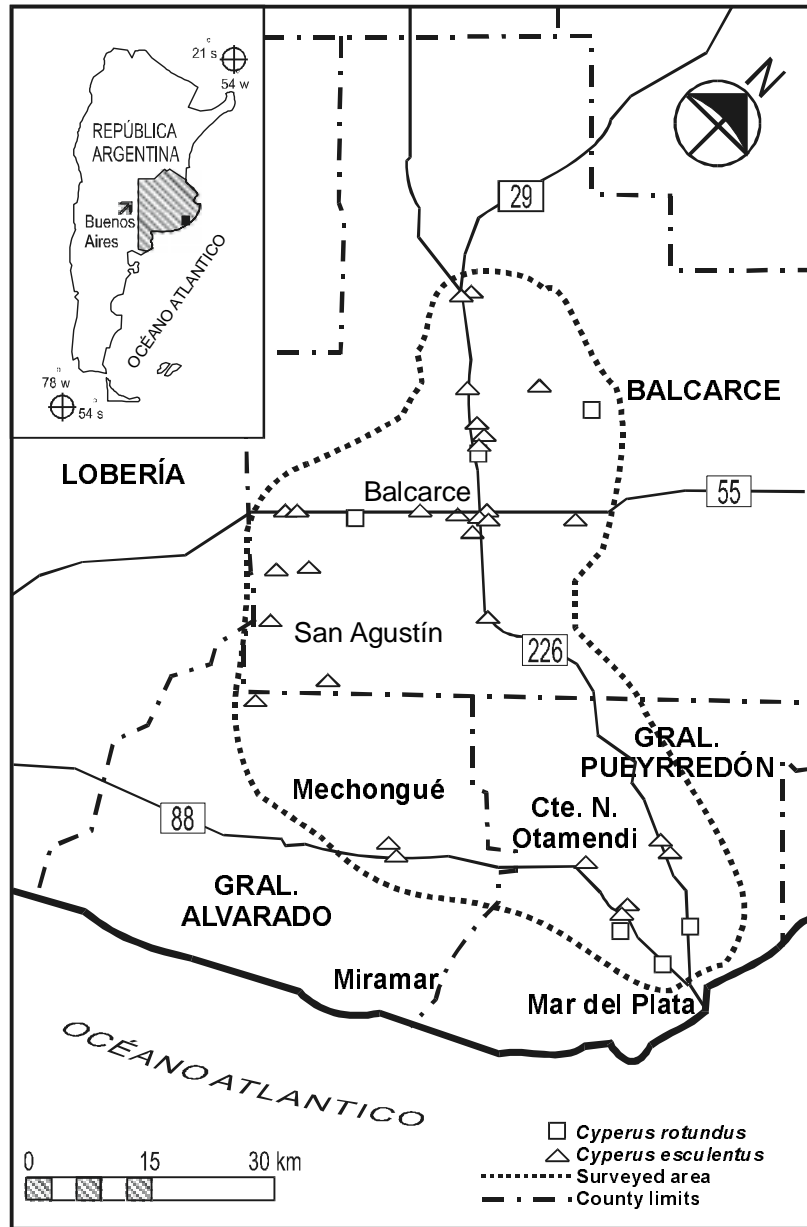
The objective of this survey was to determine the distribution, infested environments, and abundance of yellow and purple nutsedges in the agricultural area of southeastern Buenos Aires Province.

The survey was carried out in the agricultural area of three counties: Balcarce, General Alvarado and General Pueyrredón, within the limits of 57° 30' and 58°30' S; 37°40' and 38°30' W (Figure 1). This is an important area of 300,000 ha of agronomic and horticultural crop production, including corn (*Zea mays* L.), soybean (*Glycine max* L.), sunflower (*Helianthus annuus* L.), potato (*Solanum tuberosum* L.), lettuce (*Lactuca sativa* L.), carrots (*Daucus carota* L.), tomatoes (*Lycopersicon esculentum* Mill.) and beans (*Pisum sativum* L.).

Fields were randomly chosen, approximately every 10 km, along the National Highway 226 and Province Highways 55 and 88 as well as along secondary roads around farms in the surveyed area (Figure 1). Seventy nine sites, including fields, nurseries (places where small trees are propagated for transplanting) and parks around farmer's houses, totalling 2,500 ha were thoroughly surveyed to find occurrence of yellow or purple nutsedge. The survey was performed during November and December 1992, in the early growing season of field and horticultural summer crops commonly cultivated in the area. When a nutsedge species was found and identified in a field, a sample of 10-15 young plants was taken and planted into pots of 33 x 28 cm and 15 cm deep filled with soil taken from the A horizon of Typic Argiudoll soil and grown until flowering to determine more accurately if both species were present and to confirm the initial identification through reproductive characteristics.

In sites where nutsedge was found, the following information was recorded: a) location of site, including owner's name; b) size of the field; c) environment (nursery, park, or agricultural field, detailing crop in the field); d) frequency of the species of *Cyperus* in the site: isolated plants (a few plants in the field), few groups of plants (between 2 and 5 loci of plants in the whole field), many groups of plants (more than 5 loci of plants in the field) and completely invaded (plants and groups of plants spread in the whole surface of the field); e) other perennial weeds growing in the surveyed fields.

Purple and yellow nutsedge were found in the surveyed region (Figure 1), invading with different intensities 49% of the sites surveyed. Yellow nutsedge was present in 43% and purple nutsedge was registered in 9% of the total of surveyed fields, while only two fields were invaded with both species. Fields with many groups of plants or completely invaded by yellow nutsedge,



**Figure 1.** Surveyed area with the main roads National Highway 226 and Province Highways 55 and 88. Marks of sites with *Cyperus* spp. outside limits of highways correspond to sites explored along secondary roads around farms.

including noncrop fields, predominated in the environments with this weed in the surveyed area, since these two categories of frequencies represented 74% of the plots invaded by this species. The surface with the same heavy infestation of yellow nutsedge represented 69% of the area infested by both species.

Yellow nutsedge was found mainly invading productive areas planted to summer crops (Table 1). Forty one per cent of plots with some invasion of yellow nutsedge were cultivated with corn, 24% with soybean, and 18% with potato alone or with another crop in the same field. In contrast, purple nutsedge was more abundant in nurseries (57% of fields invaded by this species), recreation areas, such as parks or gardens around houses (29%) and in only one case (14%) was found as the unique perennial species invading a field cultivated with soybeans. In two cases both species were growing in the same site (Table 1).

The explanation for a greater abundance of yellow nutsedge in the area is not clear. Stoller (1973) found that tubers of purple nutsedge did not survive soil temperatures of 2°C during 12 weeks, while tubers of yellow nutsedge survived after receiving the same treatment. Daily soil mean temperatures during the coldest month in the surveyed area remain between 3°C and 6°C (Boletín Agrometeorológico, 1988, 1989, 1991, 1992). Even though temperatures are not as low as those reported by Stoller (1973) as limiting for species of nutsedge distribution in the USA, they make difficult the survival of tubers of purple nutsedge under field conditions, specially of those wintering near the soil surface and more exposed to frosts.

Other perennial weeds were found growing with yellow nutsedge in 91% of the fields invaded by this species, perennial grasses were present in 32% of total surveyed fields and common bermudagrass was the most abundant species within this group. Purple nutsedge was found growing with another perennial weeds only in 3% of sampled area.

Results obtained in the reported survey demonstrate that an integrated weed management system for yellow nutsedge is needed for the area. It is also

**Table 1.** Crops affected and area invaded in 79 surveyed fields of the southeastern of Buenos Aires Province.

Crop/environment	Yellow nutsedge		Purple nutsedge	
	Number of fields	Total area (ha)	Number of fields	Total area (ha)
Corn	14	464.0		
Soybeans	8	365.0	1	60
Potatoes	4	453.0		
Nursery <sup>(1)</sup>	3	90.5	4	91
Potatoes + squash	1	2.5		
Potatoes + lettuce	1	80.0		
Park	2	2.0	2	4
Wheat	1	50.0		
Totals	34	1207.5	7	155

<sup>(1)</sup> In two cases both species of *Cyperus* were found growing together.

arent that purple nutsedge is present in more isolated loci and measures must be implemented to prevent its dispersion.

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